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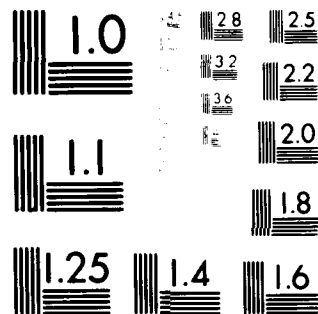
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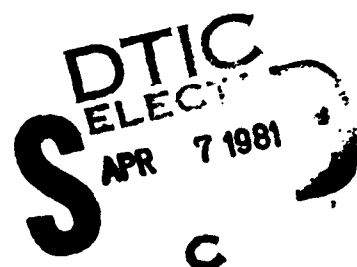
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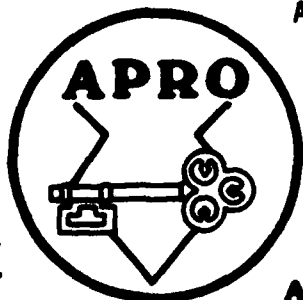
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PROFIT NEGOTIATIONS AND  
PROMOTION OF CONTRACTOR EFFICIENCY

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2 April 1981

SUBJECT: Army Procurement Research Office Report APRO 80-08, Profit  
Negotiations and Promotion of Contractor Efficiency

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Inclosed is a copy of subject report. This study examines data on negotiated profit rates for noncompetitive production acquisitions. It contains conclusions as to the effectiveness of using profit as a motivator. There are no recommendations for any immediate action to be taken by the commands. Procurement offices may find this study helpful in acquisition planning as it pertains to negotiating profit.

FOR THE COMMANDANT:

1 Incl  
as

*Paul F. Arvis*  
PAUL F. ARVIS, Ph.D.  
Director, US Army  
Procurement Research Office

DRXMC-PRO

2 April 1980

SUBJECT: Army Procurement Research Office Report APRO 80-08, Profit  
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PROFIT NEGOTIATIONS AND  
PROMOTION OF CONTRACTOR EFFICIENCY.

by

Robert W. Nick  
Gerald A. Klopp

The pronouns "he," "his," and "him," when used in this publication represent both the masculine and feminine genders unless otherwise specifically stated.

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## EXECUTIVE SUMMARY

**A. BACKGROUND.** Negotiated profit is considered a tool to be used in motivating a contractor towards accomplishment of the Government's planned objectives, one of which is achieving efficient cost performance. There is evidence, based upon detailed should cost analyses, that efficient cost performance is not being obtained on noncompetitive production acquisitions. It is submitted that major noncompetitive production acquisitions are conducted in a monopolistic (sole buyer) situation; the buyer cannot act as a monopsonist (sole seller) because of inelastic demand; and the negotiated profit ranges are narrow from one acquisition to another. A stable and narrow range of negotiated profit rates is likely to encourage cost inefficiencies. Present profit policy encourages flexibility in deriving profit objectives; however, in practice, an "excess profit" or "profit ceiling" philosophy discourages such flexibility.

**B. OBJECTIVES.** The first objective of this study is to measure the flexibility of negotiated profits through identification of historical ranges of profit rates on noncompetitive production acquisitions. Based upon this information, the second objective is to identify a means of using profit rates as motivator for contractor efficiency.

**C. STUDY APPROACH.** A literature search and review of previous studies in the profit policy area was made, and legislation on excess profits examined. Data on negotiated profit rates for noncompetitive production acquisitions for fiscal years 1975 through 1979 were obtained from DD Forms 1499, Report of Individual Contract Profit Plan, and were analyzed. Interviews were also conducted with operations and staff individuals.

D. SUMMARY AND CONCLUSIONS. Prediction of average percent profit is possible for a given fiscal year. Contractor proposed profit, Government profit objective and negotiated profit are strongly related. While the average rates may vary between major subordinate commands the overall trend tends to be similar. Profit rates have shifted upward, but the spread of negotiated profit rates remains relatively narrow. A comprehensive market analysis is necessary to place the principal contracting officer in a better negotiating position. There is currently no individual or organization regularly performing this function, and someone should be so designated. Current "profit ceiling" philosophy would tend to negate any increased policy efforts to widen the range of negotiated profit rates. Reward for efficient contract performance should be provided by using techniques similar to award fee, value engineering incentive, etc. Recognition must be given to the current limitations on the ability to measure a contractor's efficiency and to motivate a firm through negotiated profit rates. A means for measuring efficiency should be developed, as the ability to incentivize efficient performance is dependent upon a better understanding of the factors which reflect such efficiency.

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## CHAPTER I

### INTRODUCTION

#### A. GENERAL.

Negotiated profit has long been considered a tool to be used in motivating a contractor towards accomplishment of the government's planned objectives. Government objectives are numerous and often complex, and generally concern such things as achievement of system performance, meeting delivery schedules, and/or control of costs to be incurred. Extra-contractual objectives such as socio-economic goals are also frequently reflected in government contracts. This study, however, will be limited to the cost control objective. The analysis will be confined to a study of the effectiveness of profit negotiations in achieving efficient cost performance.

#### B. PROBLEM.

##### 1. Effective vs Efficient.

As stated in the Defense Acquisition Regulation (DAR), "It is the policy of the Department of Defense to utilize profit to stimulate efficient contract performance --- the aim of negotiation should be to employ the profit motive so as to impel effective contract performance by which overall costs are economically controlled. To this end the profit objective must be fitted to the circumstances of the particular acquisition ---. This will result in a wider range of profits ---."<sup>1</sup> Therefore, the objective should be to encourage the contractor to obtain the most appropriate balance between effective and efficient performance. Effective performance can

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<sup>1</sup> Defense Acquisition Regulation 3-808.1(a), US Government Printing Office, Washington, D.C., 1978, pp. 3:139-140.

easily be measured, as it is a necessary condition for satisfactorily meeting contractual requirements. For example, slippage of scheduled deliveries becomes an obvious departure from desired effectiveness of contract performance, and is easily measurable in days and months late. On the other hand, inefficient performance is not as readily discernable. A contractor can deliver an entirely satisfactory item in adherence to all the terms and conditions of the contract, yet have inefficiencies in his operation. Satisfactory contractual performance is no assurance that the performance is cost efficient. Routine cost analyses should and often does reveal inefficiencies in a contractor's operation; however, the inefficiencies are seldom eliminated. If they were, the application of should cost would not be so successful in surfacing inefficiencies. Should cost analysis is done by an integrated team of specialists in the fields of procurement, contract administration, audit, engineering and management. It is an in-depth analysis to identify uneconomical or inefficient practices in a contractor's management and operations and to develop a realistic price objective. As successful as it is in surfacing inefficiencies, application of should cost analysis is limited by the length of time required to do the analysis and the availability of qualified people. Therefore, other means of detecting inefficiencies are needed.

## 2. Competitive vs Non-Competitive.

Assuming that competition will motivate a contractor towards efficient operation, it is reasonable to conclude that non-competitive acquisitions require motivation toward efficiency. In the research and development phase of the life cycle the primary emphasis is usually on performance

rather than cost. Therefore, the real need to promote cost efficiency lies in non-competitive production acquisitions. This market arena is unique and has economic peculiarities found nowhere else.

A stable and narrow range of negotiated profit rates is likely to encourage cost inefficiencies, for under such conditions the only way to increase profit is by increasing costs. While competition may serve to correct this tendency, the statistics show that a majority of Army contract dollars are awarded non-competitively. Over 60% of the Army's procurement dollars during fiscal years 1978 and 1979 were negotiated on a non-competitive basis.<sup>2</sup> It is submitted that major non-competitive production acquisitions have the following three salient characteristics:

- a. the acquisition is conducted in a monopolistic (sole seller) situation,
- b. the buyer cannot act as a monopsonist (sole buyer) because of the relatively inelastic demand, and
- c. negotiated profit ranges are narrow from one acquisition to another.

#### C. OBJECTIVES.

The present profit policy encourages flexibility in deriving profit objectives to stimulate efficient contract performance. However, there seems to be an "excess profit," or "profit ceiling," philosophy existing throughout the Government which precludes wide ranges of negotiated profit. The objective of the study is to measure the flexibility of negotiated

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<sup>2</sup>Department of the Army, HQDA (JDHQ-SV-W-P), Procurement Statistics, Fiscal Year 1979, p. 1.

profits through identification of the ranges of profit rates on non-competitive acquisitions and the factors that impact on the development of negotiated profit rates. Given this information a means for use of profit rates as a motivator for contractor efficiency is to be identified.

#### D. STUDY APPROACH.

The study was limited to non-competitive production acquisitions during fiscal years 1975 through 1979. A literature search and review of previous studies in the profit policy area were made in order to examine profit policy promulgated in recent years. Legislation on excess profits was examined. Negotiated profit rate data on non-competitive production acquisitions for fiscal years 1975 through 1979 were obtained from DD Forms 1499, Report of Individual Contract Profit Plan. Interviews were conducted with operations and staff individuals. The data gathered by this approach were analyzed, and appropriate recommendations are made.

#### E. ORGANIZATION OF THE REPORT.

The report identifies the problem to be analyzed and the objectives of the study in Chapter I. This chapter further identifies the study approach and the organization of the report. Chapter II identifies the areas of concern and contains an analysis of the general situation peculiar to non-competitive production acquisitions. Chapter III sets forth the selection procedures used for specific profit data. It includes statistical analyses and an analysis of profit rate ranges. General observations, conclusions and recommendations are included in Chapter IV.



## CHAPTER II

### ACQUISITION ANALYSIS

#### A. AREAS OF ANALYSIS.

The Department of Defense (DOD) has an obligation to negotiate a price that is fair and reasonable to both contracting parties. The profit motive is expected to be used to promote effective and efficient contract performance. In order to use the profit motive to accomplish the desired contractual results, there are certain conditions of the acquisition that should be analyzed. Overall economic conditions must be analyzed to determine their effect on the particular market. Also that market should be analyzed, as well as the economic circumstances and objectives of the contractor involved. The government's technical and social requirements and their effect on the acquisition need to be considered. This background information and adequate cost analysis are needed to establish a negotiated profit objective that will satisfactorily influence the performance of the contractor.

#### B. ECONOMIC PARAMETERS AND PROFIT.

##### 1. Economic System.

A free enterprise economic system may be reviewed theoretically as a multiplicity of market conditions ranging from pure competition to pure monopoly or monopsony. As seen in Figure 1, the economic system can have a multitude of varied market situations affecting both buyers and sellers. The markets may have many buyers and sellers indicating a highly competitive market; one seller (monopoly) and many buyers; one buyer (monopsony) and many sellers; or any combination thereof, limited only by the number of

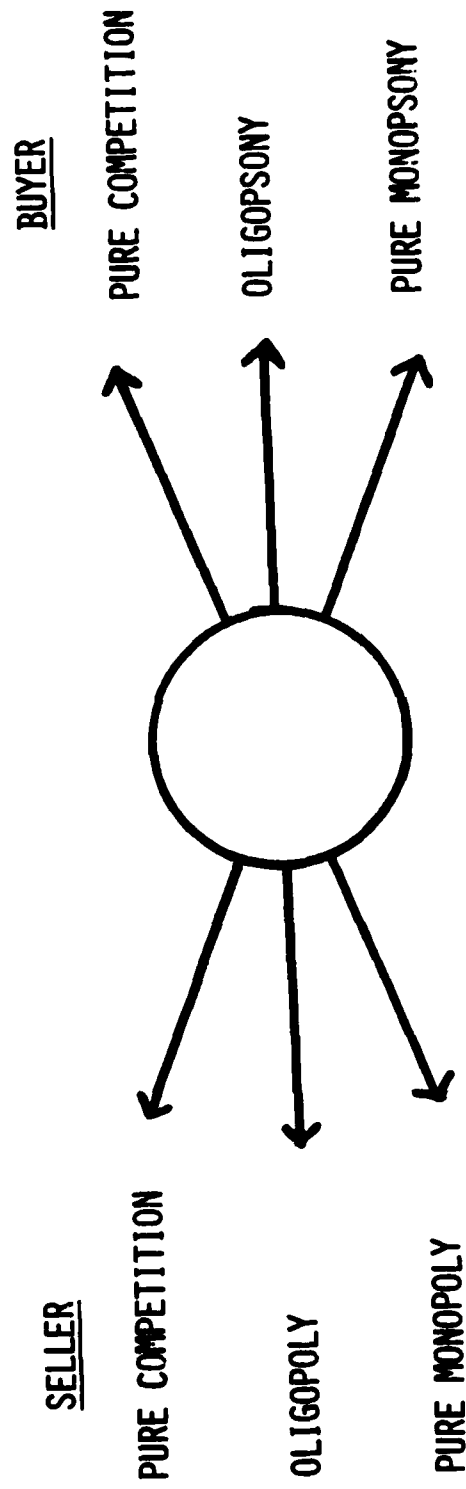


FIGURE 1. MARKET MULTIPLICITY

sellers and buyers. The ultimate extremes of this economic system rarely exist and are only important in understanding the whole of the system's potential markets. It must be decided which market most nearly coincides with non-competitive production acquisitions.

## 2. Type of Market.

The market place of non-competitive production acquisitions more nearly fits the monopoly portion of the economic system than any other. The acquisitions falling within this parameter include one seller — for whatever reason (e.g., due to a large initial capital investment, technical know-how, inability to develop adequate detailed specifications, etc.) — and one buyer. This situation could indicate a bilateral monopoly (pure monopoly and pure monopsony).<sup>3</sup> In a pure bilateral monopoly the buyer has control of the price and the seller control of demand. This is not in reality a true market picture of the non-competitive production acquisitions when elasticity of demand is examined. A monopolist's demand curve is a down slope and quite inelastic (i.e., the quantity demanded by the buyer is relatively insensitive to price changes).<sup>4</sup> This inelasticity of demand will allow the monopolist to set prices at a level that will gain the greatest possible revenue. A monopsonist's demand curve is a horizontal slope and very elastic (i.e., the demand will be extremely sensitive to price changes). However, in non-competitive types of DOD acquisitions the

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<sup>3</sup> James P. Quirk, Intermediate Microeconomics, Science Research Associates, Chicago, IL, 1976, p. 266.

<sup>4</sup> Campbell R. McConnell, Economics, 6th ed., McGraw Hill, NY, 1975, pp. 546-553.

demand curve is downward sloping and relatively inelastic for the seller yet totally inelastic as far as the Principal Contracting Officer (PCO) is concerned. Acquisition quantities are programed long before they are actually procured. The program is approved and funded through the appropriation bills of Congress. Therefore, the seller is well aware of the fixed demand long before the requirements are received by the PCO, and the knowledgeable seller needs only to project costs that approximate the amount of funds appropriated for that program. The firm projects costs approximate to funds available because it is aware that lower costs are unlikely to cause much of a change in demand, while higher costs could cause (a) no shift in demand, (b) a reduction of demand to coincide with funds available, or (c) elimination of demand in the extreme case where costs are prohibitive.

### 3. Non-Demand Leverage.

A monopolistic firm faced with relatively inelastic demand will price its goods at the highest price possible without reducing the demand. The higher the price, the more total sales revenue for a given quantity and normally more profit. After a fixed price contract is placed it would be expected for the contractor to promote efficiency to reduce costs and thereby increase profit. However, such action may reduce the firm's profit opportunities on future contracts. Unless profit rates are sufficiently flexible to offset the subsequent price reductions on contracts, the contractor would be motivated to maintain the higher costs brought about by inefficiency. By retaining inefficiencies, the firm would maintain a higher total sales revenue.

A single buyer with a fixed demand will be at the mercy of the seller unless something other than demand can be used as a leverage against the

seller. A typical leverage exercised by the government is to use sovereign rights such as the requirement upon the seller to divulge cost data and certify to its accuracy, completeness and currency.<sup>5</sup> Another leverage is the restrictions on the rate of profit that may be earned by a firm.<sup>6</sup> The Renegotiation Board was established and used to preclude contractors from receiving what the government termed excessive profits. The demise of the Renegotiation Act and the Renegotiation Board reinstated the applicability of the Vinson-Trammell Act of 1934. This act, as amended, limits the rate of profit that may be earned by Defense contractors on defense acquisitions of certain items. The implementation of the Act has been temporarily delayed by Internal Revenue Service action.<sup>7</sup> This report will not deal with the details of such profit rate limitations but it is important to note that such limitations not only exist but are considered by many people within the government as a way to preclude "excess profits" on Defense contracts.<sup>8</sup>

#### C. MOTIVATION AND PROFIT.

##### 1. Goals.

No one goal is always the dominant goal of a firm. Goals of a firm like those of individuals vary from one firm to another and also from time to time for any given firm. The goals that motivate a contractor are many and

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<sup>5</sup> Defense Acquisition Regulation 3-807.6, pp. 3:126-3:128.

<sup>6</sup> Ibid, p. 7:51.

<sup>7</sup> Federal Contracts Report, Number 852, Bureau of National Affairs, Washington, DC, October 13, 1980, p. A-19.

<sup>8</sup> Ibid, Number 821, pp. A-1 - A-6.

continue to change as conditions of the firm and the market change. These goals cover such things as money, performance, prestige, growth, citizenship and employees.<sup>9</sup>

## 2. Motivation.

The shifting and interaction of basic motives can be related to a firm's current perception of its needs. As a firm matures the needs shift from survival to growth which can be accomplished by increase in total sales. Other needs are market share and prestige.<sup>10</sup> These needs and related motives are intertwined and ever changing. Harnessing such complex interactions contractually could be considered, if not an unsurmountable task, at least one that would require the acquisition of the most extensive background information possible. Therefore the government needs to analyze not only costs but the environment of the contractor and the market as well. With such knowledge, the government must utilize a very flexible incentive posture in negotiations in order to harness motivations for the common good. But contractor motivation in and of itself is beyond the scope of this study. Broader treatment of contractor motivation is discussed in-depth by another Army Procurement Research report.<sup>11</sup>

## 3. Profit.

Profit is a primary goal in firms and is frequently dominant. In a recent survey profitability and growth were the two most frequently cited

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<sup>9</sup>  
R. G. Hunt, "Extra-Contractual Influences in Government Contracting," State University of New York at Buffalo, Buffalo, NY, March 1971.

<sup>10</sup>  
P. E. Oppedahl, "Understanding Contractor Motivation and Contract Incentives," Defense Systems Management College, Ft Belvoir, VA, 1977, pp. 33-37.

<sup>11</sup>  
R. F. Williams and D. M. Carr, Contractor Motivation, APRO 80-60, Army Procurement Research Office, Fort Lee, VA (Draft).

goals regardless of the size of the corporation. This was also true of a survey of four industrial groups, with one exception. The chemical and drugs industry placed profitability first, social responsibility second, followed by research and development and then growth.<sup>12</sup> Profit as a primary goal does not mean profit maximization but rather a level of profit adequate to meet the needs of the firm in relation to other goals.

As stated earlier, negotiation should employ profit as a motivator so as to impel efficient contract performance by which overall costs are economically controlled. In order to effectively utilize such motivation, the contractor's other motivational forces must be known to the greatest extent possible. Also, the Government must have the flexibility to negotiate within a wide range of profit rates, dependent on the acquisition environment, so as to encourage a contractor towards effective and efficient performance.

#### D. PROFIT RATES AND EFFICIENCY.

##### 1. Profit As A Motivator.

Profit is to be utilized to stimulate efficient contract performance. Negotiated profit has long been relied on as a tool to be used in motivating a contractor towards the goal of efficient contract performance. The effectiveness of the profit tool can be best determined by analyzing the profit rates negotiated and comparing them to the efficiency of performance. The use of wide ranges of profit rates coupled with evidence of efficient contract performance would be indicative of effective use of profit as a motivator.

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<sup>12</sup>  
Y. K. Shetty, "New Look at Corporate Goals," California Management Review, Winter, 1979, p. 76.

## 2. Profit and the Firm.

As stated above, all firms cannot be considered the same in a motivational light. Each one has its own set of goals which affect its motivation. Also, these same goals change from time to time for each firm. Therefore, the profit rate objective and the rate negotiated must have the flexibility to adapt to a firm's situation at any given time. The use of profit as a motivation tool must be reflected by the use of a wide range of profit rates to meet the varied conditions confronting a firm. A narrow range of profit would indicate that the situation of the firm does not influence profit, and the contractors would realize that they will receive the same profit rate regardless of their peculiar situation. Under these conditions, a contractor can harness profit to its advantage irrespective of any desired goals of the Government, and profit would become a minimal or non-existent factor in promoting contractor efficiency.

## 3. Profit Policy.

The DOD profit policy recognizes that the automatic application of a predetermined percentage to the total estimate cost of a product does not provide the motivation to accomplish or stimulate efficient performance.<sup>13</sup> A review of the history of DOD profit policy will show a consistent attempt to encourage flexibility in the negotiation of profit. Currently there is good reason to believe that the profit rate ranges are narrow. Profit rate ceilings are almost universally considered desirable as evidenced by public law, congressional testimony, and pronouncements by DOD officials.

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<sup>13</sup> Defense Acquisition Regulation 3-808.1(a), p. 3:139.



The only disagreements are in how high the ceiling should be and against what base it should be measured. The limitations on profit rates were discussed earlier in this chapter. In addition to official recognition of profit ceilings, it was found in the interview phase that most everyone has a profit rate in mind, beyond which they would consider the rate unreasonable. With this prevailing attitude and the natural inclination to resist change, it was anticipated that profit rates had not fluctuated greatly in recent years.

#### E. MARKET ANALYSIS.

The DOD, in noncompetitive production acquisitions, is a buyer facing a monopolistic market. It has a philosophy of using profit to motivate the contractor towards performance efficiency. The profit rate is measured primarily against cost, and apparently there exists a ceiling beyond which further profit would be considered excessive return to the contractor. The PCO is confronted with a complex multi-market situation and a contractor with multiple changing goals. The PCO is without the capability to do an in-depth analysis of markets and economic trends. There are currently no positions or organizations within the buying commands designated to do a detailed market and economic analysis in support of the PCO's negotiations. The PCO relies on cost analysis and can only establish a profit objective based upon the meager information available when he should have background information on pertinent markets for labor, material components, raw materials, production equipment and any other market impacting on the contractor. He should know current economic conditions and trends including the economic outlook of the contractor. Without this background data it

becomes extremely difficult to design a contract that will motivate a contractor towards performance efficiency, and the profit rate objectives are likely to be nearly the same from year to year.

## CHAPTER III

### ANALYSIS OF PROFIT DATA

#### A. INTRODUCTION.

In Chapter II it was shown what type of market the DOD buyer faces in non-competitive production acquisitions. Profit is a primary motivator for a firm and a flexible incentive posture in negotiations is necessary to adequately harness this motivator. As stated earlier, DOD profit policy recognizes that the automatic application of a predetermined percentage to the total estimated cost of a product does not stimulate efficient performance. The negotiated profit rates must be examined to determine whether or not the rates are capable of being predetermined and the degree of range between the low and high.

#### B. SELECTION OF DATA.

The data used in this report was taken from magnetic tapes containing data on the FY74 through FY79 Army DD Forms 1499. The following selection criteria were used to narrow the range of data for this analysis:

1. Type of contract codes: J(FFP), K(FP(E)), and L(FPI).
2. Type of action code: A (initial award).
3. Department codes: D (Army) or A (Army).
4. Activity codes for DARCOM commands.
5. Category: Materials.

On the basis of the selection criteria above, yearly cost, profit, and percent profit data were extracted from a total of 450 records. Table I indicates the number of records selected by Fiscal Year.

Table I. Number of Records by FY

FY	74	75	76	77	78	79	Total
Number of Records	13	109	112	86	54	76	450

C. PERCENT PROFIT SUMMARY.

Contractor Proposed Profit Rates, Government Objective Profit Rates, and Negotiated Profit Rates data are summarized in Table II, Table III, and Table IV, respectively. The data in these tables were obtained by grouping the selected data into class intervals starting at 8.5% profit through 18.5% profit. The values recorded in these tables represents the percent of the number of records for the fiscal year. For example, the value 7.69 in Table II in the 13.5% to 14.5% interval under FY74 represents 7.69% of the 13 records of FY74 (see Table I for the number of records for each FY). Upon inspection of these three tables, the following observations can be made:

1. The distributions by fiscal year are not the same within each table.
2. The distributions tend to go towards higher percent profits within each table as fiscal year increases.

The analysis which follows hypothesizes that the variation by year is truly random with an alternate hypothesis that there is a cause (such as trend) for variation (even though all of the causes may not be determined herein). Accepting the alternate hypothesis, then, means that the processes which cause variations in the data by year are not the same from one year to another (variations are not random).

**Table II. Distribution of Contractor Proposed Profit  
Rates by Fiscal Year**

<u>Interval</u>	<u>FY74</u>	<u>FY75</u>	<u>FY76</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>
less than 8.5%	0	3.67	5.36	8.14	0	0
8.5% to 9.5%	0	1.83	1.79	0	1.85	1.32
9.5% to 10.5%	23.08	20.18	15.18	13.95	16.67	11.84
10.5% to 11.5%	15.38	11.01	8.93	9.32	11.11	9.21
11.5% to 12.5%	23.08	20.18	22.32	22.09	16.67	19.74
12.5% to 13.5%	23.08	4.59	5.36	10.47	1.85	11.84
13.5% to 14.5%	7.69	8.26	11.61	4.65	11.11	3.89
14.5% to 15.5%	7.69	20.18	16.96	18.60	24.07	27.63
15.5% to 16.5%	0	1.83	2.68	2.33	0	1.32
16.5% to 17.5%	0	3.67	3.57	1.16	0	0
17.5% to 18.5%	0	2.75	1.79	2.33	3.70	6.58
more than 18.5%	0	1.83	4.46	6.98	12.96	2.63

**Table III. Distribution of Government Objective Profit  
Rates by Fiscal Year**

<u>Interval</u>	<u>FY74</u>	<u>FY75</u>	<u>FY76</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>
less than 8.5%	0	4.59	4.46	11.63	1.85	7.89
8.5% to 9.5%	7.69	12.84	10.71	9.30	14.81	9.21
9.5% to 10.5%	53.84	31.19	26.79	29.07	35.18	22.37
10.5% to 11.5%	38.46	21.10	25.00	24.42	25.93	25.00
11.5% to 12.5%	0	20.18	23.21	13.95	16.67	22.37
12.5% to 13.5%	0	8.26	5.36	4.65	3.70	9.21
13.5% to 14.5%	0	0	2.68	5.81	0	2.63
14.5% to 15.5%	0	1.83	0.89	1.16	1.85	0
15.5% to 16.5%	0	0	0.89	0	0	0
16.5% to 17.5%	0	0	0	0	0	0
17.5% to 18.5%	0	0	0	0	0	0
more than 18.5%	0	0	0	0	0	1.32

Table IV. Distribution Negotiated Profit Rates  
by Fiscal Year

<u>Interval</u>	<u>FY74</u>	<u>FY75</u>	<u>FY76</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>
less than 8.5%	0	7.34	8.04	17.44	7.41	0
8.5% to 9.5%	7.69	1.83	2.58	2.32	1.85	2.63
9.5% to 10.5%	38.46	25.69	27.68	11.63	14.81	15.79
10.5% to 11.5%	30.77	17.43	18.75	17.44	22.22	21.05
11.5% to 12.5%	23.08	23.85	20.54	26.74	25.93	31.58
12.5% to 13.5%	0	13.76	12.50	11.63	14.81	15.79
13.5% to 14.5%	0	2.75	4.46	8.14	5.56	6.58
14.5% to 15.5%	0	6.42	2.68	2.33	5.56	5.26
15.5% to 16.5%	0	0	1.79	1.16	0	0
16.5% to 17.5%	0	0	0	0	0	0
17.5% to 18.5%	0	0	0	0	0	0
more than 18.5%	0	0.92	0.89	1.16	1.85	1.32

D. STATISTICAL ANALYSIS OF PROFIT DATA.

The following statistical analyses were conducted to test the corresponding observation in paragraph C.

1. Observation One.

The discussion which follows is applicable to Tables II, III, and IV. However, only Table II will be discussed explicitly hereafter. The methodology discussed will be applied to all three tables and summarized in Table V. The following hypotheses are the mathematical statement of the observation in paragraph C.1:

$$H_0 : f_{ji} = f_{jk} \text{ where}$$

$$H_a : f_{ji} \neq f_{jk}$$

$$\left\{ \begin{array}{l} f = \text{frequencies in Table II} \\ j = \text{class interval} \\ i \& k = \text{fiscal year, } i \neq k \end{array} \right.$$

$H_0$  denotes the null hypotheses and  $H_a$  denotes the alternative hypothesis. The null hypothesis above states that the expected frequencies in Table II for each fiscal year are equal for each class Interval (j). If the null hypothesis,  $H_0$ , is true, each year should have the same expected frequency within a class interval. Inspection of Table II, however, shows that such is not true. One can observe that the distribution by fiscal year is different, but what is needed is a statistical test to determine if they are significantly different. To perform this test, the mean of each class interval, j, is calculated and assumed to be the expected frequency,  $\bar{f}_j$ , for the class interval. Any deviation from the  $\bar{f}_j$  value must be attributed to differences in the fiscal year distributions. The larger the difference, the more likely  $H_a$ , the alternative hypotheses, is true. The following test statistic determines the magnitude of the differences:

$$\chi^2 = \sum_{j=1}^r \sum_{i=1}^c \frac{(f_{ji} - \bar{f}_j)^2}{\bar{f}_j} \quad , \text{ where} \quad (1)$$

$f_{ji}$  = observed (actual) data by fiscal year i

$\bar{f}_j$  = expected frequency (mean) for interval j

$$= \sum_{i=1}^c \frac{f_{ji}}{c} \text{ for each class interval (j)}$$

r = number of rows (class intervals)

c = number of columns (fiscal year)

Referring to Figure 2, a critical value,  $\chi^2_{cv}$ , is determined and the test statistic from Equation 1 is compared to the critical value. If  $\chi^2 > \chi^2_{cv}$ , reject  $H_0$ , otherwise accept  $H_0$ . The critical values for the test statistic are tabulated in the Chi-square distribution as a function of a level of significance,  $\alpha$ , and degrees of freedom. For this test, degrees of freedom is found by equation 2:

$$df \text{ (degrees of freedom)} = (c-1) (r-1) \quad (2)$$

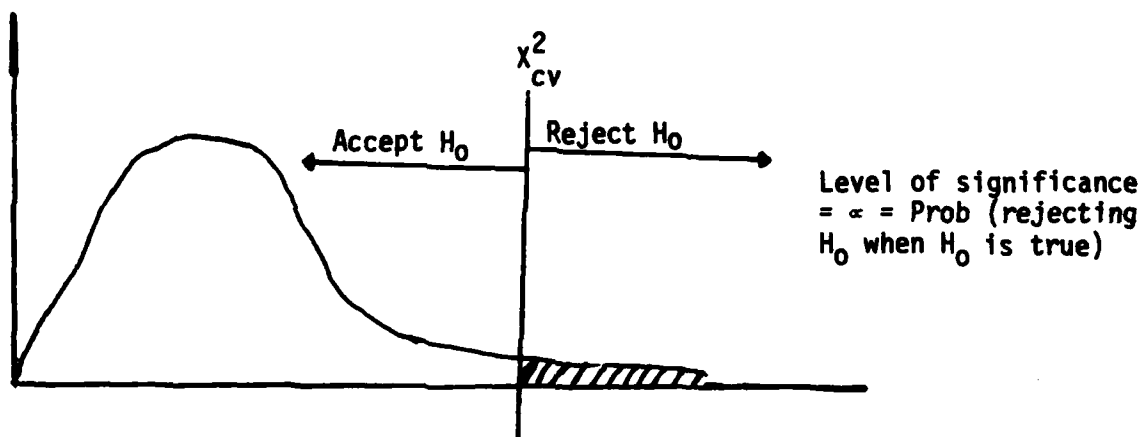


Figure 2. Accept/Reject Criterion

Using Equation 1 and 2; the data of Tables II, III, and IV; and  $\alpha = .05$ , Table V can be determined.

Table V. Chi-square Hypothesis Tests

<u>Distribution</u>	<u><math>\chi^2</math> test</u>	<u>df</u>	<u><math>\chi^2_{cv}</math></u>	<u>Conclusion</u>
Contractor (Table II)✓	129.77	55	40	Reject $H_0$
Government Obj (Table III)	119.64	55	40	Reject $H_0$
Negotiated (Table IV)	122.80	55	40	Reject $H_0$



Since the  $\chi^2$  values are greater than  $\chi^2_{cv}$  according to Figure 2, the conclusion is that the distributions are not identical by Fiscal Year.

## 2. Observation Two.

The analysis of paragraph 1 above indicates that the distributions within Tables II, III, and IV are different by fiscal year. This difference could be caused by actual changes in the process of weighted guidelines such as the distributions "moved" towards higher percent profits (on the average). To test this hypothesis, the data of Tables II, III, and IV is averaged by fiscal year, giving results of Table VI.

Table VI. Average Profits by Fiscal Year

<u>FY</u>	<u>Average Contractor Percent Profit</u>	<u>Average Government Objective Profit</u>	<u>Average Negotiation Profit</u>
1 (74)	11.97	10.30	10.80
2 (75)	12.65	10.74	11.38
3 (76)	12.71	10.87	11.10
4 (77)	12.90	10.44	11.10
5 (78)	13.65	10.63	11.61
6 (79)	13.74	11.13	12.14

If the distributions have "moved" towards higher percent profits on the average, a regression analysis of Table VI should indicate a high positive relationship between the three average percent profit columns and the fiscal year. The discussion which follows is applicable to the three average percent profit columns of Table VI. However, only the Average Contractor Percent Profit column will be discussed explicitly hereafter. The methodology discussed will be applied to all three columns of Table VI and the results summarized in Table VII. The following hypothesis is the

mathematical statement of the observation in paragraph C.2:

$$\begin{array}{l} H_0 = B \leq 0 \\ H_a = B > 0 \end{array} \quad \text{where} \quad \left\{ \begin{array}{l} B \text{ is the population slope of the regression} \\ \text{equation } Y = a + Bx \end{array} \right.$$

If the null hypothesis,  $H_0$  is true, there is no increasing trend in the average contractor proposed percent profit. Performing a linear regression analysis will enable one to test the above hypothesis. For the regression analysis,  $X$ , the independent variable, is the fiscal year (coded as 1 for FY74, 2 for FY75, etc.).  $Y$ , the dependent variable, is the contractor proposed profit rate in Table VI. Using the data of Table VI and the regression model, the results of the regression analysis are given in Table VII.

Table VII. Regression Analysis of Averages

<u>Y</u> <u>Dependent</u> <u>Variable</u>	<u>a</u> <u>Y Intercept</u>	<u>b</u> <u>Slope</u>	<u>X</u> <u>Independent</u> <u>Variable</u>	<u>Degree</u> <u>of</u> <u>Freedom</u>	<u>r</u> <sup>2</sup>	<u>Std</u> <u>Error</u> <u>of Est</u>	<u>T</u> <u>Ratio</u> <u>for b</u>
Contractor % Profit	11.732	.34399	1 - 6	4	.931	.175	7.36
Gov't % Pro- fit Objective	10.346	.0969	1 - 6	4	.368	.266	1.52
Negotiated % Profit	10.616	.2111	1 - 6	4	.697	.291	3.03

The standard (std) error of the estimate in Table VII is a measure of the dispersion of the estimated value of  $y$  (using the regression equation from the actual value of each  $y$ ). The larger the std error, the more the predicted and actual values differ. To enable one to test the null hypothesis, the T ratio for  $b$  was calculated using equation 3:

$$t = b - B_0$$

$$S_{y.x} \sqrt{\sum x_i^2 / n}$$

$$S_x \sqrt{n-2} \quad \text{where:} \quad (3)$$

$B_0$  = hypothesized value (0 is this instance)

$S_{y.x}$  = Std error of estimate

$S_x$  = Std deviation of  $X_s$

$n-2$  = degrees of freedom

$\sum x_i^2$  = Sum of X squared values

A critical value,  $t_{cv}$ , is determined from the t distribution with level of significance,  $\alpha$ , and  $n-2$  degrees of freedom. If  $t > t_{cv}$ , reject  $H_0$ , otherwise accept  $H_0$ . The first and third T ratio values of Table VII are significant for any  $\alpha$  greater than .010 while the second T value of table VII is significant for any  $\alpha$  greater than .10. Thus, for most reasonable values of  $\alpha$ , we reject the null hypothesis and conclude that there is an increasing trend in the three types of percent profit.

The Paragraph C.1 above concluded that the distributions by fiscal year are significantly different. However, the cause of difference could not be attributed to specific causes of variation in percent profits (e.g., increasing trend). In other words, what may have taken place is that the distributions remained the same, but were "moved" towards higher percent profits due to an increasing trend. To test this hypothesis, the original data were "detrended" to bring all fiscal years to constant FY74 values. This was accomplished by subtracting the slope times the number of years between FY74 and the year of each individual fiscal year of interest. This results

in a set of data with a common base year 1974. The resulting three distributions were arranged in class intervals and the  $\chi^2$  test of paragraph C.1 performed on the detrended data. The results of the  $\chi^2$  test are summarized in table VIII.

Table VIII. Analysis of Detrended Data

<u>Distribution</u>	<u><math>\chi^2</math> test</u>	<u>df</u>	<u><math>\chi^2_{cv}</math></u>	<u>Conclusion</u>
Contractor	247.58	55	40	Reject $H_0$
Government Objective	132.77	55	40	Reject $H_0$
Negotiated	135.25	55	40	Reject $H_0$

As with paragraph 1, the null hypothesis,  $H_0$ , is that the expected frequencies of a class interval are equal. The conclusions, as shown in Table VIII reject the null hypothesis. Since the data have been detrended, the resulting distributions are significantly different due to some other causes, not simply due to the distributions "moving." The increasing trend could be due to the higher inflation rates forcing contractors to require higher percent profits to adequately deal with the increasing interest rates in the money market. The increasing trend in higher percent profit could also be a result of changes in the weighted guidelines. From Table VII, one can observe that the rate of increase (the slope) for the contractor percent profit is the largest, while the government percent profit objective is the lowest rate profit.

#### E. COST RELATIONSHIPS.

Because DD Forms 1499 changed from FY74 to FY77, only FY77 - FY79 cost data is used in cost relationship analyses. A total of 220 sets of data are

used for the analysis below. Each set of data consists of nine variables. Table IX defines the variables and gives the  $r$  for comparison of each to all other variables. (All  $r$  values listed are significantly greater than 0 at the .001 level of significance).

Table IX. Selected Correlation Coefficients ( $r$ ) of Cost

<u>Variable</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>
1 = Contractor Profit	1	.959		.927	.921		.967	.929	
2 = Contractor Cost	.959	1		.962	.985		.984	.992	
3 = % Profit			1			.628			.776
4 = Gov't Obj Profit	.927	.962		1	.984		.971	.969	
5 = Gov't Obj Cost	.921	.985		.984	1		.976	.995	
6 = % Profit			.628			1			.670
7 = Neg. Profit	.967	.984		.971	.976		1	.982	
8 = Neg. Cost	.929	.992		.969	.995		.982	1	
9 = % Profit			.776			.670			1

Several observations can be made from Table IX.

1. In all three types, profit and cost are highly correlated (Variables 1 and 2, 4 and 5, and 7 and 8).
2. In all three types, percent profit is not highly correlated ( $r < .9$ ) to either cost or profit. (Although there is a moderate relationship between 3 & 9 and 6 & 9; 7 & 9, and 8 & 9 have almost no relationship.)
3. Contractor cost and government objective cost is highly correlated to negotiated cost.

Because of the high correlation ( $r > .9$ ) between several of the variables of Table IX, predictions of one variable on the basis of another variable is possible. For example, Variable 1 (contractor profit) and Variable 2 (contractor cost) have an  $r$  value of .959. Thus, a cost relationship exists between the two variables whereby a knowledge of one would enable the prediction of the other. Similar relationships exist between contractor, negotiated, and government objective cost and profit. The prediction equations are listed in Table X. Using these equations of Table X, the Government would be able to predict the final negotiated contract price and profit on the basis of either Government objectives or Contractor proposals. Similarly, the Contractor could, with good accuracy, predict the Government objectives and Negotiated costs on the basis of its cost proposals and the equations in Table X.

Table X. Cost Prediction Equations

<u>Y Variable*</u>	<u>X Variable</u>	<u>A</u>	<u>B</u>	<u>C</u>
Negotiated Cost	Gov't Objective	-42674.3	1.05973	.991
Negotiated Profit	Gov't Profit	33081.4	1.07971	.943
Negotiated Cost	Contractor Proposal	144307	.860474	.985
Negotiated Profit	Contractor Profit	65619.5	.702045	.935

\*Y = A + BX with X and Y variables above.

#### F. ANALYSIS BY COMMANDS.

All previous cost analysis grouped the data together to look at the overall trends without respect to individual contributing factors. One factor which may be a variable which affects the negotiated cost, profit, or percent profit could be command trends. Because the cost analysis in

paragraph D showed a good relationship between negotiated cost and government objective (and contractor proposed cost), the analysis in this paragraph is limited to costs by command for negotiated costs only. The assumption is that because of the strong relationships between the overall costs, the relationships between government and contractor costs will be similar to the negotiated cost relationships. The distribution in Table XI show the percent of the number of contracts having a negotiated percent profit indicated under the interval indicated. For example, A command data consisted of 31 records. Of those 31 records, 3.23% had a negotiated percent profit less than 8.5%. An  $\chi^2$  analysis similar to the one performed in paragraph 4 shows the 5 command distributions to be significantly different for any reasonable level of significance. The command averages are also indicated in Table XI. When a test of the differences between all possible pairs of means is performed, A and B; B and D; and C and D means are significantly different for  $\alpha > .005$ .

From Table XI, one can conclude that, based upon the sample data presented, differences in command negotiated percent profit exist as evidenced by the averages being different. A correlation analysis was conducted by command, resulting in Table XII. Also included in Table XII is the correlation coefficient ( $r$ ) for all data when variable 1 (negotiated profit) and variable 2 (negotiated cost) are correlated. As shown in Table XII, the correlation coefficients (of variables 1 & 2) by command do not differ substantially from the overall data. A t-test confirms that there is no significant difference between the command and overall correlation coefficients for variables 1 & 2. For example, the correlation for A (.976) is not significantly different from the all data correlation (.982). Thus, one

could conclude that the same relationship that exists between Variable 1 (Negotiated Profit) and Variable 2 (Negotiated Cost) overall also exists for each command individually.

Table XI. Command Negotiated Percent Profit Distributions

<u>Interval</u>	<u>C O M M A N D</u>				
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
less than 8.5%	3.23	13.92	19.35	3.91	0
8.5% to 9.5%	0	4.43	3.23	.78	0
9.5% to 10.5%	16.13	31.01	16.13	12.50	25.0
10.5% to 11.5%	22.58	18.35	19.35	21.09	25.0
11.5% to 12.5%	29.03	15.82	22.58	30.47	0
12.5% to 13.5%	9.68	11.39	9.68	18.75	25.0
13.5% to 14.5%	3.23	1.27	9.68	6.25	0
14.5% to 15.5%	16.13	3.16	0	3.13	25.0
15.5% to 16.5%	0	0	0	.78	0
16.5% to 17.5%	0	0	0	0	0
17.5% to 18.5%	0	0	0	0	0
more than 18.5%	0	0.63	0	2.34	0
Number	31	158	31	128	4
Average %	11.93%	10.52%	10.69%	12.01%	12.48%
Variance	2.96	6.82	5.47	3.84	4.07



Table XII. Command Correlation Comparisons

<u>Command</u>	<u>Correlation 1 &amp; 3</u>	<u>Correlation 2 &amp; 3</u>	<u>Correlation 1 &amp; 2</u>
A	.244	.097	.976
B	.006	-.088	.986
C	-.094	-.117	.994
D	.073	.042	.999
E	.372	.028	.937
All Data			.982

Variable 1 = Negotiated Profit

2 = Negotiated Cost

3 = Negotiated Percent Profit

When a test of hypothesis is conducted on the  $r$  values in Table XII, the correlation between variables 1 & 3 and 2 & 3 are not significantly different from 0 for any reasonable level of significance. However, this lack of correlation amongst these variables should be expected to be zero. Variable 3 is the ratio of variable 1 to variable 2. Previous analysis has shown that, although there is some variation in percent profit, it falls in a relatively narrow range of values (mostly between 8.5% to 16.5% for negotiated contracts). Thus, percent profit is almost a constant value. When a constant is correlated to another variable, the correlation is zero. When  $t$ -tests are conducted on the correlation of variables 1 & 2 for each command, none are found to be statistically different from all the data (all commands). On the basis of this analysis by commands, one could conclude that the distributions of percent profits by command are statistically different. However, the relationship between negotiated cost and negotiated profit by

command is not statistically different from the overall data. The differences in percent profit could be attributed to differences in the types of item contracted for, differences in contractor effort, risk, etc.

G. PROFIT RATE RANGES.

It has been shown that the trend in profit rates is a shift to higher rates. This would be expected with the broadening of weighted guidelines and increased emphasis on the use of profits to motivate contractors towards government objectives. Also the range of profit rates should be widened if profit is to be used in motivating a contractor towards efficiency. Table XIII shows the range allowable by application of weighted guidelines using the negotiated total costs of fiscal year 1979 data by factor.

The contractor's proposed cost is highly related to the negotiated cost. If the rate of profit remains fairly constant and the demand is relatively inelastic then the only way to increase profits is to increase target costs (the pre-negotiation costs) and decrease actual costs.

It was decided to use a line graph to display the closeness of profit rates (a. contractor proposed, b. government objective, and c. negotiated). The shift in profit rates from one fiscal year to another was too slight to legibly show the differences without using a graph too large to be included in this report. Therefore, the following discussion is related to the data in Tables II, III, IV, and XIII.

In Table II the relative frequency of the contractor's proposed rates shows they have shifted generally upward with minor perturbations. The shift seems to be primarily from low rates, 9.5% or less to more in the higher range 15.5% or more. The mid-range from 9.5% to 15.5% has accounted for 88 to 100% of the proposed profit rates throughout all 6 fiscal years.

**Table XIII. Profit Rate Range Permitted by Weighted Guidelines**

<u>Profit Factor</u>	<u>Weight Range</u>	<u>Measurement<sup>1</sup> Base</u>	<u>Minimum Profit</u>	<u>Maximum Profit</u>
Materials	1-5%	30%	.30%	1.50%
Engineering				
Direct Labor	9-15%	10%	.90%	1.50%
Overhead	6-9%	10%	.60%	.90%
Manufacturing				
Direct Labor	5-9%	10%	.50%	.90%
Overhead	4-7%	15%	.60%	1.05%
Other Costs	0-10% <sup>2</sup>	10%	.00%	1.00%
General Mgmt	6-8%	15%	.90%	1.20%
Subtotal			3.80%	8.05%
Adjustment Factor	(30%)	<u>      </u>	(1.14%)	(2.41%)
Total Effort		100%	2.66%	5.64%
Cost Risk	3-8% <sup>3</sup>	100%	3.00%	8.00%
Facilities	6-10%	10%	.60%	1.00%
Indep. Dev't	1-4%	1.5%	.01%	.06%
Other	-5 to +5%	1.0%	(.05%)	.05%
TOTAL PROFIT			6.22%	14.75%

<sup>1</sup>

These values reflect the percentages of negotiated total costs attributed to each profit factor during Fiscal Year 1979.

<sup>2</sup>

As no profit weight range is provided for this factor, the range reflected in this computation was developed from the Fiscal Year 1979 historical experience as reflected on the DD Forms 1499 for that year.

<sup>3</sup>

As the data analyzed for this study included both FPI and FFP contracts, the range reflected in this computation represents a composite of the individual ranges suggested for these contract types in DAR 3-808.6.

Table III shows the relative frequency of the government's objective profit rate. The shift upward is not so apparent as was shown in Table II. The mid-range here is lower and represents a narrower band. The spread which

accounts for 88 to 100% of the objective rates is only 5% (8.5% to 13.5%) and shows very little shift upward. The government's objective rates seem to be fairly consistent over the six fiscal years.

The mid-range of the negotiated profit rates shown in Table IX is more consistent with the government's objectives than that of the contractor's proposed rate. This range has stayed primarily in the 9.5% to 13.5% range with a little more frequency shown below and above the range than is shown in the government's objective range. The evidence seems to show that the profit rates do not fluctuate greatly from year to year. The range is narrow (4%) and accounts for 84 to 92% of the negotiated rates. The rate range for fiscal year 1979 in table XIII is 8.5% as compared to 84% of 1979's rates having only a 4% range. This confirms that narrow predictable profit rate ranges are being negotiated.

#### H. SUMMARY.

Prediction of average percent profit is possible for a given fiscal year using trend equations of Table VII, while prediction of actual percent profit is not possible although a relationship does exist. Each of the three percent profits have different trends. The contractor's proposed profit is usually the highest, the government objective the lowest, while the negotiated profit is somewhere between the two.

The total contractor cost proposal and government objective costs are highly related to the negotiated costs. Similarly, contractor profit, government profit objective, and negotiated profit are strongly related. A moderate relationship exists between contractor percent profit, government objective percent profit, and negotiated percent profit.

The costs by commands tend to be the same as the relationships between the data as a whole, without regard to command. There is significant differences between average percent profits for several commands. While the average rates may vary between commands the overall trends tend to be similar.

The profit rates have shifted upward but the range of rates have not changed significantly. The range of negotiated profit rates remain relatively narrow for most of the data of this report indicates a range of 4% (9.5% to 13.5%) even though there have been policy efforts in recent years to increase the flexibility of the rates. The elimination of narrow profit ranges will not of itself bring about efficiencies. The seller is naturally interested in making as much as the market will bear. Given a fixed demand coupled with a fairly constant negotiated profit rate the only way to increase sales and dollar profits for a given item would be to increase costs. The additional costs will be accompanied by a larger dollar figure of profit and increased total sales revenue. Any reduction of costs under these conditions will reduce the profit opportunities on subsequent contracts. A contractor must not bring about efficiencies if it is to maintain its sales revenue. Only negotiated profit rates that are tied into efficiencies affected by the contractor will truly encourage efficiency. This opinion is generally supported by economists and is even recognized as a factor by those economists who have proposed government control of profits on all businesses by setting upper profit rate limits.<sup>14</sup>

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<sup>14</sup>J. William Leasure, and Marjorie S. Turner, Prices, Profit and Production, University of New Mexico Press, Albuquerque, 1974, pp. 31-50.

## CHAPTER IV

### CONCLUSIONS AND RECOMMENDATIONS

#### A. GENERAL OBSERVATIONS.

It is the express intent of DOD that the profit motive be employed to stimulate efficient contractor performance. There are four areas that need to be analyzed to understand and employ profit as a motivating force for efficient performance. First the general economic situation and the market must be investigated. Secondly, the motivational forces and contractor's goals should be ascertained. Next, an adequate cost analysis must be performed. Finally, profit objectives must be based upon all the information gained in the analyses of the three preceding areas. There is a need for more information to be made readily available to the PCO for use in price negotiations.

This sort of in-depth analysis is accomplished to some degree on all major non-competitive production acquisitions, but it is seldom if ever done in total. There are no positions or organizations within buying commands designated to do a detailed economic and market analysis. Contractor's goals and motivational directions are difficult to ascertain in most cases. Cost analysis is done in all cases to some degree; however, it may range from a comparison of proposed costs with previous costs incurred to an in-depth should cost analysis. Profit is developed under the DAR's weighted guidelines policy.

#### B. CONCLUSIONS.

##### 1. Market Analysis.

Elements of the market are applicable to all acquisitions. Economic considerations involve more than just inflation rates; they include overall

production growth, growth industries, money supply, and a variety of other factors. Specific markets need to be analyzed by answering questions on such things as materials availability, labor supply, market conditions for similar items, availability of capital for the market, etc. Such an analysis is beyond the capabilities of the individual PCO, both in time and physical resources. There is no established organization to perform this analysis function, which should be done on a continuing basis. Currently if such information is obtained it must come from the cost analysis or be performed by an ad hoc group.

## 2. Contractor Data Analysis.

The analysis of the contractor's goals and motivations is difficult primarily because such information is not usually divulged outside of the firm. Attempts to obtain such data have been successful only when individual companies are not identifiable. Companies jealously guard internal management data to the greatest degree possible and will divulge such data only when it will be fully protected. Analysis of a company's position must be limited to data readily available to the government. Cost analysis frequently reveals inefficiencies in a contractor's operations, but these inefficiencies are seldom eliminated by cost analysis. Should cost analysis identifies inefficiencies not always revealed by traditional cost analysis. However, should cost analysis is time consuming and requires extensive use of high caliber personnel that are limited in number. More economical and less time consuming methods of analyzing and evaluating a contractor's efficiency must be developed for those acquisitions that are not subjected to should cost analysis.

### 3. Profit Rate Analysis.

There are many external and internal factors that affect a contractor's response to contractual obligations. Profit rates must be flexible in order to be effective under these numerous motivational situations. Past and future contractual requirements should be considered when negotiating profit rates. The negotiation of a narrow band of profit rates makes negotiations predictable and encourages cost inefficiencies. Contractors realize that if they bring about cost efficiencies under one contract they will lower their opportunity for equal profit on subsequent contracts. Therefore a decrease in costs will result in a decrease in profit dollars. It has been found that regardless of profit policy pronouncements, the negotiated profit ranges have been stable. The rates are constrained by two factors: ceilings to avoid what would be considered excessive profits, and lack of performance efficiency data to know what profit is needed to motivate the contractor to efficiency.

### C. RECOMMENDATIONS.

#### 1. Market Analysis.

There is a definite need for detailed market information to be used in support of negotiations. The PCO should enter negotiations with a contractor only after economic and market conditions impacting on the acquisition have been carefully analyzed. The DOD representative should have as much market information available as does the contractor's representative in support of multi-million dollar negotiations. In addition to the cost analysis function, an individual or an organization within an acquisition activity should be designated to perform the function of economic and market analysis



for each planned major non-competitive negotiated acquisition. Such analysis should be made readily available to the PCO's for use in price negotiations.

## 2. Profit Rates.

The profit rates as they are now developed and negotiated represent a narrow band, even though profit policy encourages application of flexibility and wider ranges of profit rates. Even if through increase policy emphasis the natural reluctance of negotiators to vary profit rates from acquisition to acquisition could be overcome, DOD would still be confronted with limitations on profit rates due to current profit rate ceiling philosophy. The reward for efficient contract performance should be provided by using techniques similar to award fee, value engineering incentive, etc. However, the application of an incentive award requires the ability to measure the contractor's performance efficiency. The current limitations of motivating contractor's towards efficiency through negotiated profit rates should be recognized, and a means for economically measuring a contractor's efficiency should be developed. The ability to incentivize efficient performance is dependent on a better understanding of the factors which reflect such efficiency.

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### STUDY TEAM COMPOSITION

Robert W. Nick, Procurement Analyst, US Army Procurement Research Office, US Army Logistics Management Center, Fort Lee, Virginia. B.B.A., 1951, University of Mississippi; M.A. in Economics, 1966, Ohio State University; Certified Professional Contract Manager. Prior to joining the Procurement Research Office, Mr. Nick served as a member of the Aeronautical Systems Division Procurement Committee. Mr. Nick also has had experience as a contracting officer, contract negotiator, and supervisory purchasing agent.

Gerald A. Klopp, Statistician, Army Procurement Research Office, Fort Lee, Virginia. B.S. in Electrical Engineering, 1972, Michigan State University; M.E. in Industrial Engineering, 1974, Texas A&M University. Prior to joining the Army Procurement Research Office Mr. Klopp was employed as an Operations Research Analyst at the Logistics Center, Fort Lee, Virginia. Mr. Klopp also has experience as an Electronics Engineer, Instructor and Course Director. He also serves as an Adjunct Professor at a local university.

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13. ABSTRACT The objectives of this study were to measure the flexibility of negotiated profits and identify a means of using profit rates as a motivator for contractor efficiency. The study approach was to examine historical data on profit policy and excess profit legislation. Data on negotiated profit rates for noncompetitive production acquisitions for five fiscal years was obtained and analyzed. Current profit rate ceiling philosophy limits effectiveness of using profit as a motivator. Need exists for economically measuring contractor's efficiency. Study on requisites for contractor productivity improvement being conducted. ←			

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